GENERAL LINGUISTICS

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Vol. II, No. 2 Spring, 1957

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Published by the
Department of Modern Foreign Languages
University of Kentucky
Lexington

GRAMMEMIC THEORY

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Language may be viewed as comprised of phonology, lexicon, and grammar. If for the moment one accepts seriously this commonplace view as being in some sense valid, an extraordinary fact may then be brought to attention. Whereas the phoneme provides for the linguistic scientist a minimum unit of phonology[1] and the morpheme provides us with a minimum unit of lexicon, there is no comparable unit which is widely accepted as a minimum unit of grammar as such. Grammemic theory attempts to fill this gap. It proposes the grammeme as the basic minimum unit of grammar.

It is not to be expected--if the history of grammeme theory proves to be more or less parallel to that of phoneme theory--that a grammeme as a unit should be completely "new" in relation to the ordinary traditional manner in which language students work with languages. The phoneme was not "new" either. Alphabet makers for millenia had had phonemic theory implicit in their operations. The "newness" of the phoneme lay rather in the explicitness with which these old procedures and assumptions were presented, and the rigor with which they could be applied to new problems. Similarly, the grammeme (or related members of the grammatical hierarchy of which it is a part) is implicit in every practical grammar written for hundreds of years. It is the explicitness of the approach and the resultant rigor with which analytical procedures can apply the theory, which is basically new. Nevertheless, just as numerous discoveries of importance could be made once phoneme theory was made explicit, so also many items of considerable importance as well as of detail are emerging already in studies viewing language within a framework which makes room for the grammeme.

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hierarchy of grammemes makes up the hierarchy of the grammar of the sentence type. The ultimate constituents of the grammar hierarchy of a sentence type are the grammemes.

It must be carefully noted that in the preceding paragraph we referred to sentence types rather than to particular sentences. This was done in order to avoid some of the difficulty which may otherwise be felt in differentiating between a morpheme as a lexical minimum of a segment of a particular sentence, and a grammeme as the grammatical minimum of the sentence type. The grammeme involves pattern, cutting across many individual sentences which may contain the same grammemes but completely different morphemes. The grammemes manifested in John hit Bill and in Joe hit George are the same, even though the morphemes differ; the immediate constituents of the grammar are the same; the grammatical functional segments are the same. John and Joe are distinct lexical items, distinct morphemes, while John hit Bill and Joe hit George are distinct specific sentences, i.e. distinct specific members of a high level of the lexical hierarchy. (Nevertheless, just as some scholars choose to say that the phoneme /t/ occurs in hit since an allophone of /t/ occurs there, so also it is sometimes convenient to state that John in John hit Bill is a manifesting allounit of the class of morphemes which is in turn manifesting the grammeme 'subject-as-actor', and hence that that grammeme occurs in the specific sentence indicated. Here then, the same phonemes are manifesting the morpheme John and the grammeme 'subject-as-actor', but this does not warrant the ignoring of the structural distinction between morpheme and grammeme.)

The characteristics of a grammeme which in many instances are perhaps most readily recognized in current descriptions of a grammemic system[2] are the functional slot with its class filler. A set of morphemes, or of morphemes and morpheme sequences, which can fill a functional slot make up, by virtue of that fact, a class of some structural relevance. In grammemic description, this class may be given a symbol which is either expressed in words (e.g. the name "noun", or "tense affixes") or is symbolized arbitrarily (as by the letter "B", or by a number such as "200"). The functional slot, on

the other hand, is the structural place at which some member of the manifesting class comes, and frequently--but not always --has an identifiable structural meaning such as 'subject-as-actor'. This functional meaning may be different from and additional to any class meaning of the members of the class filling that slot (as 'subject-as-actor' differs from and is in addition to the class meaning "noun" which fills not only subject slot but also object--and other--slots).

Other characteristics of grammemes are relevant to the description of a grammemic system, and to some degree may find their way into the symbolization of the system. Etic variants of emic slot and of emic manifesting class may both be found. The etic, or 'geographical' location of the slot may change (compare Yesterday I went to Detroit with I went to Detroit yesterday, in which the term yesterday comes in different etic slots but in the 'same' emic slot). The etic content of a manifesting class may change, conditioned by the appropriateness of the particular words of the class to their occurrence in a context which contains a particular member or members of other classes in neighboring emic slots, within any one universe of discourse (as cow may not occur in the slot The ... jumped over the moon in ordinary contexts, even though it occurs in a universe of discourse of fantasy). More detail on grammemic structure and conditioned variants is available[3] but need not be summarized here. Enough has been given here, however, to introduce one to some of the basic points of view, and to make it easier for him to read the relevent articles which are beginning to appear in the journals.

We turn now to the question: If the grammeme does in fact fill a gap in linguistic theory, why has it not been treated in this form much earlier? Several reasons have contributed to the delay:

The first reason which we may mention for such a delay has been the general climate of opinion in which it is assumed that levels of analysis in linguistics proceed from phoneme to morpheme to word to sentence. This view paralyzes thinking along grammemic lines. So long as the morpheme is considered as a member of the same hierarchy with the phoneme, but on a higher level with it, there is no easy passage to the gram-

meme. The grammeme is simple to arrive at only after one recognizes that the next higher level above the phoneme is the syllable, followed in turn by the stress group, in the same hierarchy. Then the morpheme can be seen to be a minimum in a lexical hierarchy distinct from the phonological one, even though manifested by the same physical substance. Next, one is logically prepared to look for a minimum unit of the hierarchy of immediate constitutents of grammatical pattern and function (as distinct from the lexical hierarchy comprised of particular morphemes, words, phrases, etc.).

The second reason is a corollary of the first: The failure to see the parallelism of three hierarchies which interpenetrate (with some but not all borders in common) delayed the discovery of the grammeme as such. The same oversight was responsible, one may note in passing, for making the syllable--though apparent to all on some kind of level of native reaction--the stepchild of linguistic analysis, excluded from or ignored in many treatments of linguistic unit types. Once the phonological hierarchy is recognized, and treated as a hierarchy of relevant emic units (not merely as a sum of distributional restrictions or redundancies or probabilities) the way is open for observing more clearly some of the facts concerning the two other hierarchies.

A third contributing factor to the delay of grammemic recognition is a tendency in American linguistics to a kind of reductionism which desires to make of linguistic structure, apart from phonology, merely a collection of morphemes in varied distributions and combinations of distributions. In this climate of opinion the recognition and acceptance of a new emergent unit type beyond that of phoneme and morpheme was almost certain to be slow in coming.

The fact that persons with formalist tendencies in linguistics desire to develop linguistic theory without any ultimate reliance on meaning--regardless of their acknowledged use of meaning in practical situations--leads to further resistance. The grammeme, like the morpheme, is in practical situations best recognized by using a kind of meaning--a structural meaning rather than a lexical one however. Just as morpheme analysis developed by use of meaning, so grammeme development is

coming that way also. If morpheme analysis should ultimately prove to be possible without such reference to meaning, presumably grammemic analysis will bend in that direction too. However that may be, the initial stages of discovery and development of the grammeme and grammemic theory need to include some semantic criteria (as a minimum, differential semantic criteria) at some points in the analysis--a fact to give pause to those who are of formalist inclination. This, then, is the fourth reason.

A fifth reason for difficulty in developing grammemic theory, we can now see in retrospect, has been an overly rigid assumption of a morphology-syntax border. The basic unit of grammar, to be universally applicable, had to be relevant for languages where such a border does not make a sharp dichotomy in the grammatical structure of such languages. It was important that the basic grammatical unit occur not only in morphology, but in syntax also, and in any language in which a morphology-syntax boundary was not particularly important.[4] When, therefore, the prevailing climate of opinion set up structural progression from the phonemic level, to the morphological, to the syntactic, it was in part preventing development of basic grammatical theory at this point.

A sixth reason for the delay in grammemic development can be seen in the complex of problems which were implicit in Bloomfield's attempt at setting up the unit which he called a tagmeme. These I have treated elsewhere,[5] and need not discuss in detail here. The reader in checking these former discussions should note especially, however, (a) that hierarchical structuring of a grammatical kind was not explicitly developed in Bloomfield,[6] so that lexical and grammatical hierarchical units could not easily be differentiated, and (b) that Bloomfield attempted to parallel the taxeme with the phoneme,[7] with both meaningless--but this led to frequent inconsistencies in which many of his proposed taxemes, like his tagmemes,[8] had meaning. A distribution of phonemes, furthermore, does not enter the structure of a single morpheme in the way that a distribution class of morphemes (or of morphemes and morpheme clusters) enters the structure of a grammeme, so that the parallelism[9] of taxeme to phoneme is highly confusing--perhaps,

in fact, the basic reason we have rejected the tagmeme and set up the grammeme instead.

In general, the data which Bloomfield subsumed under a taxeme of selection (or occasionally treated as a tagmeme of selection, p. 166), are treated in grammemic theory as the emic class filling the emic slot, or the membership of that emic class. Data seen under his taxeme of order reappear as a component of the distribution mode of the grammeme. His modulation data (i.e. intonation contours) are, in English, elements of a coexistent intonational system which contains its own phonemes of intonation, its morphemes and hierarchy of morpheme sequences of intonation, and its intonation grammemes and hierarchy of grammemic sequences; borders of the larger units of the intonational hierarchies may or may not coincide with borders of some of the units of the segmental hierarchies--and at times may force the division of the latter to come at a particular place, or may enter into single complex integrated structures with them. The phonetic modification data of Bloomfield are in general seen as the phonological variants of morphemes in sequence, and hence eventually affect the particular manifestations of grammemes when a sequence of grammemes is in turn manifested by these particular morphemes.

In summary, then, in reading articles depicting the grammemes of specific languages, the reader should be prepared to find a symbolism which has direct or indirect reference to slot and class in the hierarchical structuring of grammar. Phoneme, morpheme, and grammeme are treated as minimum units of the respective hierarchies of which they are part.

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1. Though some scholars would prefer to treat the contrastive feature as the minimum phonological unit--a fact which does not affect our argument at this point.
2. See the articles by Hart, Mayers, Shell, to appear in the July issue of IJAL, 1957.
3. See Kenneth L. Pike, Language in Relation to a Unified Theory of the Structure of Human Behavior, Preliminary edition, Part I, Chapter 7 (Glendale: Summer Institute of Linguistics, 1954).
4. Grammemic theory leads to an applied methodology in

which one may work for some time without postulating any border between morphology and syntax. If the data warrant, after the language is partly analyzed, such a border is, however, set up for any particular language. Even then, however, grammeme units are found on both sides of the border. In addition, the border can be set up without the insistence that all data conform to such a division. Overlap in the form of data currently treated as clitcs or phrase words can be handled as a set of nonconformities of their respective hierarchical boundaries.

5. "Taxemes and Immediate Constitutents," Language 19.65-82 (1943); and Language in Relation to a Unified Theory of the Structure of Human Behavior, Part I, pp. 155-56.
6. This lack I attempted to correct in Language 19.70 but this proved insufficient to salvage the tagmeme concept.
7. Leonard Bloomfield, Language (New York, 1933), p. 166: 'A taxeme is in grammar what a phoneme is in the lexicon--namely, the smallest unit of form.'
8. '.. the smallest meaningful units of grammatical form may be spoken of as tagmemes' (p. 166). For references to Bloomfield where taxemes are sometimes treated as meaningful, see Language, 19.65-67.
9. See Bloomfield, p. 264, where the proportion implied is phoneme: taxeme = morpheme : tagmeme. The falseness of this proportion is sometimes more readily seen if one transforms the equation into: phoneme : morpheme = taxeme : tagmeme. Taxeme sequences in Bloomfield's material did not constitute tagmemes in the sense that phoneme sequences constitute morphemes.

A NOTE ON LINGUAL VS. LINGUISTIC

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May I put in a word in favor of the wider adoption of the term lingual to refer to what pertains to language, and the more restricted use of the adjective linguistic to refer to what pertains to linguistics, or the study of language. Current usage, which indiscriminately sanctions a phrase like linguistic change side by side with linguistic method, seems to me sorely confusing -- strangely out of line with the scientist's general craving for precision, and the linguist's particular concern for a distinction of "levels".

To relieve the adjectival term linguistic of its present ambiguity, the form lingual in the above sense looks like a "natural" from the viewpoint of analogic word derivation. One does come across it every now and then in the professional literature; but by and large, the use of linguistic in its double meaning seems to be persisting. I suspect that many linguists are barely even aware of this terminological black spot. Yet a conscious and concerted effort to introduce a clear verbal distinction between the two senses would appear warranted on more than purely "esthetic" grounds; for, once such a distinction spreads beyond the scholarly confines, it might even help the general lay public to grow less hazy about "linguistics", and about the difference between a speaker of a language and a "linguist" who speaks about language.

To exemplify the suggested usage: If "descriptive" linguists and "semanticists" were to draw closer together, this would be a "linguistic" event; but if as a result the term linguistics changed some of its connotations, this would then be an instance of "lingual" change.

HAMITES AND KELTS AND SUBSTRATUM

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For some time now it has been fashionable not only to find Illyrians under many a bed in Europe but also to detect evidence of Egyptians under sundry of the curiosities of Irish grammar. Perhaps the leader in the field, though by no means the intentional promoter of some of the aberrancies, has been Julius Pokorny.[1] Now most responsible linguists today will hazard few statements on the subject of substratum. Indeed, we shall have to know a good deal more about the nature of language, of continuity of linguistic structure, of structural characteristics (if any) of linguistic families, and of the nature of the process involved in linguistic borrowing, before it will be possible to say what sort of evidence is relevant to such a discussion, much less what conclusions could be drawn from any evidence brought to bear. In the meantime, until we know what to do with such evidence, it seems reasonable to exclude from evidence so adduced demonstrable irrelevancies.

Some time ago,[2] W. R. Lansberg contributed an article attempting to show certain syntactical similarities between Keltic and Egyptian in support of the arguments for a Hamitic substratum in Keltic. Five points are discussed: the use of introductory phrases to express emphasis; a particular use of the demonstrative pronoun; the form of the so-called conjugating prepositions; a particular construction for the expression of noun predicates; and the use of a preposition plus verbal noun for future meaning. It is my purpose to discuss briefly the last three items.

It is true that the so-called conjugating prepositions form a class that is striking by virtue of its uniqueness in Indo-European and that this class is represented in both major Keltic groups, Irish and British. On the other hand, the similarity with Egyptian goes no farther than mere superficial structural similarity. One can find parallels in linguistic structure the world over among the most diverse groups; with a restricted number of items there are mathematical reasons for expecting

partial similarities of this sort. And in the case in point the similarity is only partial--Irish had no suffixial possessives. To argue a case for the connexion of such similarities one would first have to demonstrate the unlikelihood of the growth of such a feature in the one language by traceable internal pattern pressures of the earlier structure without necessary outside interference, and one should also show the independence of such a feature from other known developments in the language.

Indeed, most of the conjugating prepositions, although obscure on a few points, are readily explained as straight phonological developments of particle plus enclitic pronominal form in close juncture. The point requiring explanation, then, is not the "conjugating preposition" per se, but rather the change in junctural distribution, and consequent shift in accent set-up (or vice versa), in Proto-Keltic. Such problems are never profitably discussed apart from the total relevant system in which they stand. This problem then cannot be separated, without further proof, from that of the suffixed and infixed object pronouns, from the background of the preverbal particles and the development of the dual set of morpheme alternants for complex verb stems traditionally called "prototonic" and "deuterotonic." All these features rest ultimately on the interplay of junctural and accent phenomena. All the features, in short, that make Keltic such a striking curiosity among IE languages may well go back, through perfectly transparent and well-paralleled linguistic steps, to a few rather unexciting changes in juncture/accent distribution in Proto-Keltic. To pin the responsibility on Egyptians (or anyone else for that matter) we must first have some evidence on their general junctural habits, not on the distribution of a few of their incompletely parallel morphemes that happen to be in a rough fashion semantically equivalent. In any case, in many languages, it is merely an accident or orthographic tradition that certain enclitic or proclitic forms happen to be written persistently as separate words. When at last we get adequate phonemic descriptions of the majority of Indo-European languages complete with relevant junctural phenomena, we may be in for numbers of surprises. Our ultimate notion of what the "typical" sequence looks like may be in for considerable revision.

On the matter of the other two points, it would appear that the author did not look far within Keltic before leaping to the banks of the Nile. The well-known Irish and Scottish Gaelic formula which can be illustrated by the literal translation "James is in his carpenter," meaning "James is a carpenter," has been studied by many, the last to my knowledge being Dillon.[3] The construction has had a checkered history in Irish, but all stages can be rather readily observed. It is sufficient for the present purposes to record that the origins of the construction require no assumptions contrary to other known phenomena in Indo-European, and appear to lie in several other constructions; the formula in question, which arose within the recorded history of Irish, is not attested before 1100 A.D.!

The expression of futurity with preposition plus verbal noun in Scottish Gaelic does not support any serious argument. Any discussion of this point must start with the observation that the interior setup within Scottish Gaelic for the expression of futurity has undergone some changes since Middle Irish times. Old Irish normally expressed the future by use of a special future tense. The morphology of this tense was characterized by certain irregularities. These irregularities were pretty well ironed out during Middle Irish times, and one type was specialized as the future, this type subsisting in Modern Irish dialects. Because of normal phonological changes the future tense in Scottish Gaelic tended to fall together formally with the present tense. As a result, the Modern Scottish Gaelic continuation of the Old Irish present now normally serves as a future and present time is expressed by newer periphrases. It would therefore take a great deal of proving to trace this one slim thread back to a misty Egyptian substratum.

The above points would seem obvious to a Keltic scholar but it is only fair to point them out to non-specialists. The non-specialist may in turn reasonably ask why he is being confronted with the bothersome minutiae of Keltic phenomena. My reply to this is that we can never meaningfully work divorced from the hard facts of specific data.

And what do these hard facts illustrate? Something very tangible in this case, I think. Keltic forms a linguistic fringe

on the well explored and exhaustively studied linguistic mass of Europe. It has been a uniquely happy playground for carefree romantic theorizing, and its sharply contrastive culture-patterns have led people to seek concomitantly bizarre linguistic origins. Fortunately, Europe is minutely understood on the basis of staggeringly detailed scholarship; Keltic, while a bit esoteric, has a very well studied and documented linguistic history enriched by the monumental labors of men such as Zeuss, Windisch, Thurneysen, Pedersen, Ernault, Strachan, Vendryes, Pokorny, Sir Ifor Williams, and Jackson. The result is that claims can be tested and controlled quite readily when necessary, as has been done in the case of the modest few cases above. The upshot is that the case for substratum dissolves completely under the bright light of a few simple linguistic facts. Yet we know we still have much to learn of the details of Proto-Keltic and the operation of linguistic contact and borrowing.

I do not mean to imply for a moment that I dismiss the notion of 'substratum' as something inconsequential or non-existent. But how much deeper must be our ignorance in the case of light-hearted analogous claims in the case of places like Africa, New Guinea, Melanesia, or the Amazon basin. In the present state of our knowledge, substratum studies can scarcely claim serious audience outside of Europe; and even for that familiar continent, until our structural studies are much further advanced and our knowledge of linguistic mechanisms much more refined, substratum formulations remain at best only tenuous and rather remote hypotheses beyond the immediate reach of authoritative validations. In the meantime, we must be content to curb our credulity.'

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1. See, for example, J. Pokorny, Zeitschrift fűr celtische Philologie 16.95-144; 231-66; 363-94(1926-27); 17.373-88 (1928); 18.111; 233-48(1929-30); Probleme der kelt. Urgeschichte, Congrès international des sciences préhistoriques et protohistoriques III, Zurich 1950, 281-4; Archiv Orientalni 19.268-70 (1951); Réponse a M. Bouda, Eusko-Jakintza 5.79-81 (1951), positing the same substratum for Irish and Basque; ZRPh. 68.418-21 (1952), alleging a Hami-

tic origin for *anderos.

2. W. R. Lansberg, Language 16.95-8 (1940).
3. M. Dillon, ZCP 17.307-27 (1928).

VELARIZED CONSONANT INFLUENCES ON VOWEL QUALITY IN COLLOQUIAL EGYPTIAN ARABIC

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In the normal phonetic sequence of Arabic, consonants precede vowels (CV), and most classical and colloquial morphological forms generally are prone to contain three consonants. Colloquial Egyptian Arabic, like its classical counterpart, is built upon the CV type of syllable, though CVC and CVCC types appear as syllabic reconstruction occurs in the absence of vowels. Vowel omissions or the affix patterns may alter the three-syllable count, but the basic syllable remains a true product of the consonant plus vowel type. This is always evident in the root (triliteral) examples of Arabic.

Living Arabic speech, not like the orthographic system which provides for only three vowel phonemes, has two groups of vowel phonemes belonging to two general classes of vowels: those that can be doubled (/i, e, a, o, u/) and those that cannot (/I, A, U/). The vowel phonemes of either group are pronounced under the restrictions of three specific lip positions and are, therefore, not pronounced in as much of an indeterminate manner as may at first be concluded. These three lip positions and their Arabic names are: lips apart (fatḥa), lips thinly spread (kasra), and lips with a small rounded opening (ḍamma). The allophonic variations of these two classes of segmental vowel phonemes have such an extensive range, that what seems to be an allophonic overlap is quickly sensed. Phonemic overlap, however, does not come under consideration since lip position distinctions rule it out. (To my knowledge, the sound spectrograph has not yet been used to test colloquial Egyptian Arabic vowels.)

The aforementioned tremendous allophonic vowel range is attributed to the fact that the various kinds of consonants impose their respective sort of quality on the vowels closely preceding or following them. This influence on vowel quality, as well as an objective phonemic breakdown of colloquial Arabic, needs immediate descriptive investigation by trained phonologists.

Those consonants in colloquial Arabic that are the factors producing vowel affectation are further clarified at this point. Arabic consonants are of three general kinds: those that are velarized, those that are not velarized, and those of the pharyngeal and laryngeal areas. Although each of the kinds of consonants and the influences they produce in the phonology are of equal merit, only the first group (those that are velarized) is discussed for the present. Stress, pitch, voicing, and vowel and/or consonant length in the role of phonemic distinctions are not mentioned (although they are by no means unimportant). The present topic is thus not an exhaustive study, but rather a simple attempt, through sample illustrations, to set forth an area of Arabic linguistic research that is worthy of more complete investigation.

The velarized consonants (often called emphatic, heavy, or retroflex consonants) are distinctive from their non-velarized counterparts in that they have the additional phonetic characteristic of being produced by a raising of the rear of the tongue toward the veium. An English speaker does not ordinarily discriminate between a velarized and a non-velarized consonant, although he can immediately distinguish the difference between the vowels influenced by velarized consonants and the vowels not influenced by the non-velarized consonants. This distinguishing point is for the English speaker the fact that the influenced vowel is produced further back and lower in the mouth. Since distinctive English vowels are much more numerous than Arabic vowels, the Arabic speaker hears the same vowel in the vicinity of two different consonants and the English speaker hears two different vowels in the vicinity of the same consonant! However, the corpus of vowels is not augmented as a result of this phenomenon, since the vowel allophones influenced by velarized consonants are in complementary distribution to the non-influenced vowel allophones.

The following are some examples of the velarized consonants of colloquial Cairo Arabic (/ṭ, ḍ, ṣ, ẓ, ɮ/) in contrast with their non-velarized counterparts showing their influences on the vowel quality of the nearby vowels:

[ṭiin] 'mud'	[tiin] 'fig'
[ṭaab] 'he got well'	[taab] 'repented'

[ṭalʕ] 'he looked'	[talʕ] 'hill'
[bəṭṭ] 'to cut open'	[batt] 'decided'
[bəṭṭ] 'armpit'	[baaṭ] 'spent the night'
[ḍabb] 'he packed'	[dabb] 'he knocked down'
[ḍalʕ] 'he lost (his way)'	[dalʕ] 'he directed'
[ḍamm] 'he collected'	[damm] 'blood'
[ḍaam] 'he injured someone'	[daam] 'he lasted'
[ḍarb] 'hitting'	[darb] 'street gate'
[baʕḍ] 'some'	[baʕd] 'after'
[ṣeef] 'summer'	[seef] 'sword'
[bəṣṣ] 'he looked'	[bass] 'only'
[ẓaahir] 'clear'	[zaahir] 'bright (color)'
[ẓann] 'thought'	[zann] 'hum'
[aḷḷa] 'God'	[alla] 'he told her'
[waḷḷa] 'by God'	[walla] 'appointed'

More investigation of the problem would show the phonetic influence of the velarized consonants on the vowels in syllables that precede them, in syllables that follow them, and in syllables not immediately preceding or following them. Such investigations would also show the modifications this influence becomes subjected to with velarized consonants in initial, medial and final positions. Vowel harmony, vowel and consonant length, the influences of the velarized consonants, and the influences of the non-velarized consonants in their interacting orders and importances would then become a more clearly understood part of Arabic phonology. It has been suspected by some of those who have considered this topic (Harold B. Allen, Elizabeth Bowman, Richard Harrell, W. Freeman Twaddell, and this writer) that there may be other consonants (perhaps some of the non-velarized ones) that nullify or cancel the properties that these velarized consonants have: making vowels become pronounced lower and further back in the mouth. Ultimately, complete research on this topic would be a very significant contribution toward a descriptive linguistic study of Arabic phonemics. There are numerous challenging problems awaiting the Arabic investigator, and the vowel influencing phenomenon is just one of the many that stand out to an English speaking researcher.

THE PROTO-GERMANIC LONG STOPS

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It is generally stated in the handbooks that Proto-Germanic possessed the long or geminate voiceless stops *pp, *tt, *kk.[1] The usual assumption as to the origin of these is that during the Proto-Germanic period a following *n was assimilated to all the IE stops and aspirates (*p, *t, *k; *b, *d, *g; *bh, *dh, *gh) perhaps only when the accent immediately followed in IE, though most handbooks do not include this restriction, the result being *pp, *tt, *kk,[2] though other explanations as to their origin are not lacking.[3] The following examples will illustrate the usual point of view:[4]

a. IE *pn > Gmc. *pp: IE *kup-nā- :: ON hoppa, NHG hüpfen, OE hoppian 'to hop',
b. IE *tn > Gmc. *tt: IE *snit-no- :: NHG schnitzen, MHG snitzen 'to cut',
c. IE *kn > Gmc. *kk: IE *lk-nā- :: ON lokka, OE ġeloccian, OHG locchōn 'to entice',
d. IE *bn > Gmc. *pp: IE *slab-n- :: ON slappi 'sloppy person' (cf. Lith. slabnùs 'weak'),
e. IE *dn > Gmc. *tt: IE *(s)tud-no-:: MHG stutzen 'to be startled',
f. IE *gn > Gmc. *kk: IE *lug-no- :: ON lokkr, OE loc(c) OHG loc 'lock of hair' (cf. Lith. lùgnas 'pliant'),
g. IE *bhn > Gmc. *pp: IE *skubh-no- :: MHG schupfen 'to rock',
h. IE *dhn > Gmc. *tt: IE *bhudh-no- :: ON botn, OE botm.[5]
i. IE *ghn > Gmc. *kk: IE ligh-na- :: OE liccian, OHG lecchōn 'to lick' (cf. Gk. lichnéuō 'to lick').

The necessity for placing this change in Proto-Germanic is occasioned by another phenomenon of assimilation, the West-Germanic lengthening before *n, which yielded not only *pp, *tt *kk, but also *bb, *dd, *gg, as shown in the following examples:

a. *pn > *pp: OHG tropfo 'drop'; OE lappa 'rag'.
b. *bn > *bb: OHG knappo 'boy-servant'; OE ebba 'ebb-tide'.
c. *tn > *tt: OHG metzo 'measure'; OE cnotta 'knot'.
d. *dn > *dd: OHG getto 'weed'; OE budda 'bug'.
e. *kn > *kk: OHG druck 'pressure'; OE scucca, sceocca 'devil'.
f. *gn > *gg: OHG stecko 'stick'; OHG rocko, OE rogge 'rye'.

That is, IE *b, *d, *g; *bh, *dh, *gh + *n has yielded two results in Germanic: (1) a Proto-Germanic change to *pp, *tt, *kk, and (2) a West-Germanic change to *bb, *dd, *gg. This is the situation as the handbooks present it to us.

In the discussion of Proto-Germanic long stops the Gothic argumentum ex silentio is either tacitly or explicitly dismissed. It has been stated that the lack of Gothic evidence for the geminates is fortuitous;[7] that Gothic really had geminates, but that they were common only at a lower level of speech than that recorded in our manuscripts of the Bible,[8] and that the lack of geminates from other sources prevented Gothic from employing gemination as a word-forming device.[9] Since both Norse and West Germanic are known to have undergone extensive modification in their consonantal systems, notably numerous cases of gemination due to assimilation and other factors, after the Proto-Germanic stage of the language, it would seem that their evidence should be accorded less importance, ceteris paribus, than that of Gothic. It is clear that Gothic must be given first rank in any discussion of Proto-Germanic consonantism, and that we ignore it only at our peril.

The situation in Gothic, however, points clearly to the nonexistence of geminated stops in Pre-Gothic. kk occurs only in the two words smakka* 'fig' and sakkus* 'sack', the latter obviously a loan-word, and the former probably one, although some authorities consider it to be a Germanic word. pp does not occur in native Gothic words. tt occurs only in atta 'father' and skatts* 'money' (also in compounds such as at-tekan 'to touch', at-tiuhan 'to draw up', where juncture probably intervenes[10]), both probably loans, though atta is often considered to be a babbling word from child language.[11] bb does not occur in Gothic words. dd and gg occur only where Verschärfung has taken place (i.e. only in the graphic sequences ddj and ggw, from Proto-Germanic *jj and *ww), and the phonetic interpretation of both sequences is disputed.[12] On the other hand, the cluster of consonant + n is quite frequent in Gothic, occurring especially in the weak verbs of the fourth class (formed by the suffix -nan, for example dishnupnan 'to become torn', diskritnan 'to become torn', gawaknan 'to awake'), though not by any means restricted to this group. In view of these considerations, the Gothic evidence must be considered to contradict the as-

sumption of long stops in Proto-Germanic.

In addition to the Gothic evidence, numerous other difficulties stand in the way of assuming long stops for Proto-Germanic. Streitberg has pointed out that only three of the forms adduced as evidence for Proto-Germanic n-assimilation have etyma in the other IE languages which also have n-suffixes.[13] Several authorities have pointed out the fact that assimilation of the type kn to kk is unknown to the European branch of IE[14] which is, of course, a very weak argument. Another argument is that of Martinet, who believes that the change of pn to pp is 'phonétiquement invraisemblable', an argument with which we can not agree at all.[15] It has also been pointed out that some of our most certain etymologies show forms in which the alleged change did not take place, namely the Gothic and Norse verbs in -nan (Gothic gawaknan, Norse vakna : OE weccan, OS wekkian, OHG wecchen; Gothic gabatnan 'to profit', Norse batna 'to get better'), and the following among others: Gothic auhns* (Gk. ipnós) 'oven'; OHG degan, OE þegn 'follower, swordsman' (Gk. *teknós); OE swefn 'dream' (Skt. svápna-); OHG boden 'ground' (Skt. budhná-); Goth. apn* 'year' (Lat. annus = IE *atnos).[16]

Since these exceptions to the alleged rule occur, attempts have been made to restrict its operation. Osthoff and Kluge proposed the rule that the assimilation to *n occurred only when the accent immediately followed in IE, a rule which obviously will not hold in the face of the examples cited above in which the assimilation did not take place, but where the accent followed in IE, nor in the face of alleged assimilation products like OFris. hwitt 'white', as compared to Skt. śvítna-, where the accent preceded the gemination.[17] It has also been pointed out that the n in the Norse (and Gothic) verbs in -na- has been retained because it belonged to a living inchoative-forming suffix.[18] It is difficult to see how the -na of Norse is more living than the -na of the West Germanic languages, and yet assimilation has taken place there; whoever wishes to use this criterion in Norse should explain why it does not apply for West Germanic. Kuryłowicz' attempt to evolve a theory of 'morphological gemination' to take care of exceptions to the usual rule, mentioned above, would, even if accepted, place the gemination after

the Proto-Germanic period. In addition to all the objections set down above, another may be added: If C + n is supposed to have yielded CC in Proto-Germanic, how did C + n come to occur in West Germanic?

In view of all these objections, the assumed change of C + n to CC in Proto-Germanic seems very unlikely, and in view of the Gothic evidence, the existence of long stops in Proto-Germanic seems equally unlikely. A reinvestigation of the problem with a view towards explaining the alleged cases of Proto-Germanic long stops ought to be welcome.

Geminates in West Germanic

It is generally assumed that, some time after the original change of C + n to CC in Proto-Germanic, the clusters thus formed acquired the function of forming intensives from verbs and pet-names from the Germanic two-stem names, and that after the long consonants acquired this function, they were extended by analogy into forms where they had, historically speaking, no phonetic justification.[19] The following examples will illustrate this function of the long consonants:[20]

I. Intensives allegedly formed by Proto-Germanic gemination:
   a. NHG bücken 'to bow, stoop, bend' (to biegen, 'to bend'),
   b. NHG nicken 'to nod' (to neigen 'to incline'),
   c. NHG schmücken 'to adorn' (to schmiegen 'to press close, cling to'),
   d. NHG zücken 'to jerk' (to ziehen 'to pull, tug'),
   e. NHG schupfen 'to shove' (to schieben 'to shove'),
   f. NHG schnitzen 'to whittle' (to schneiden 'to cut').

II. Pet-names formed by Proto-Germanic lengthening:
   a. NHG Fritz (to Friedrich),
   b. NHG Götz (to Gottfried),
   c. NHG Lutz (to Ludwig),
   d. OHG Sicco (to Sigifrid),
   e. OS Fokko (to Folkmar).

High German examples have been given, because most of the

examples cited in discussions are from High German. It will be noted that the concept of 'intensive' has to be stretched somewhat to include some of the verbs cited. It is clear that the long consonants in the function of forming intensives and pet-names can lay no claim to the status of morphemes.[21] They share a broad general meaning, but they cannot be separated from the rest of the word because they do not combine with other segments in any regular manner.[22] They may be compared with other expressive sound sequences such as the /sl/- in English slink, slide, slip, slick, slither, etc. or the /gl/- in glow, glare, glimmer, gleam, gloaming, glint, etc., or to the -/tš/- in NHG wutschen, pitschen, patschen, lutschen, fletschen, glitschen, klatschen, knutschen, quetschen, quietschen, zwitschern, etc. Such quasi-morphemes have been called phonesthemes, and this is the term I shall use here.[23]

Previous studies have erred in attempting to separate the long consonant phonesthemes from the other phonesthemes of the language. That is, NHG zücken cannot be said to have been formed by gemination of the stem final consonant of a stem *tug-, even if we carry this formation back to Proto-Germanic. It is rather formed by the substitution of the phonesthemic sequence *-/kk/- for the stem final consonant. That this is true is seen by the word zupfen 'to pull hairs, tweak', also formed on the basis of a stem *tug-, but with the *-/pp/- phonestheme instead of the *-/kk/- phonestheme. The -pf- of zupfen cannot be considered to be a phonetic development of the stem final consonant of *tug-. A number of like doublets can be cited: klopfen 'to knock, beat' : klotzen 'to stamp, kick'; ducken 'to duck (in both senses), to double up' : dutzen 'to kick, thrust, pack together'; schnitzen 'to whittle' : schnicken 'to whittle, to nick'; stutzen 'to hesitate, start aback' : stupfen 'to run into, push' (both ostensibly to stossen 'to kick, shove, thrust'). A like point may be made in the case of the geminates used in pet-names, where we find numerous doublets and even triplets, such as Friddo, Fritz, Fricke (to Friedrich). That the geminates were phonesthemes, and that the change was not a simple phonetic one is shown more clearly, however, by forms in which the reflexes of the geminates are substituted for sounds of other series or orders, or where sounds are left out: Fokko (to Folkmar), Hippe, Hitta (to Hildibert, Hildiberga), LG Bosse (to Burkhart), Happo

(to Haduberht), Hesse (to Hermann), Hasse (to Hartmann), Becka (to Bertila), etc. Such forms as these cannot by any means be explained by 'expressive gemination', or by regular phonetic development, but are rather cases of expressive sound substitution, if we have to stick to the term 'expressive'. The explanation is simple. In Gothic and Norse we find a class of verbs with the suffix -na-, mostly with an inchoative or perfective (in Gothic inchoative-passive) sense, such as Gothic gawaknan, OIcel. vakna 'to awake'; Goth. gabatnan 'to profit', OIcel. batna 'to get better'; Goth. fullnan 'to become full', OIcel. fullna 'to fulfil, finish'; OIcel. kvikna 'to quicken, come to life'; OIcel. sakna 'to lack, feel the loss of' (to saka 'to scathe, damage'), etc.etc. At the time that the gemination of stops before *n occurred in West Germanic, the new geminates acquired a phonesthemic function of forming not intensives, but perfectives, since they had already been used to indicate punctiliar action when they were *Cn, cf. the examples cited above. That this interpretation is true is seen by the vocalism of these forms. In Gothic and in Norse, the verbs of the -na- class had reduced grade vocalism (i.e. the vocalism of the past participle), and this is the vocalism found in the West Germanic 'intensive' verbs; had it been merely a case of expressive gemination of the stem-final consonant, then one cannot see why the vocalism of the present or of the preterite singular should not appear.

The case for the phonestheme is even clearer with the geminates in pet-names in West Germanic. When the Germanic two-stem names were shortened to one stem in West Germanic, they were generally made into n-stems; almost all the geminated short-names known to me are n-stems. Within the n-stems there were numerous oblique case-forms where the stem-final consonant was followed immediately by an *n, and where assimilation to *n took place in West Germanic; where short-names are not geminated, this is due to the existence of case forms where the *n did not follow the stem-final. Examples for this change are numerous outside of the hypochoristics, for example: OHG rocko, roggo 'rye'; OHG backo, bahho 'cheek'; tropfo, troffo 'drop'; knappo, knabo 'boy'.[24] The geminates thus formed in n-stems came to have the function of forming hypochoristic names because of the fact that a large number of

n-stems had this function and had geminates, which thus came to be used to form other short-names where they were not historically justified.

It will be remembered that the only reason for the assumption of a Proto-Germanic gemination of the stops was to account for the varying treatment of Proto-Germanic *bn, *dn, *gn, which seem to have become on the one hand *bb, *dd, *gg (West Germanic), on the other hand *pp, *tt, *kk (Proto-Germanic). It is clear that this necessity is no longer present once the long consonants are assumed to be phonesthemes, for *kk could replace *gg just as easily as *pp could replace *kk (cf. the example of zucken, zupfen, cited above). It should be remembered that the number of forms which can be adduced to support the alleged change of *gn to *kk, *bn to *pp, *dn to *tt is quite restricted. I should like to suggest the following: There was no Proto-Germanic n-assimilation, no Proto-Germanic gemination; *pp, *tt, *kk did not exist in Proto-Germanic. Long stops from n-assimilation are to be found only in West Germanic; those few cases where we find forms which do not seem to agree with the ordinary result of West Germanic n-gemination are to be explained as due to the phonesthemic function acquired by the long consonants after the West-Germanic n-assimilation, as demonstrated above. n-assimilation did not occur in Norse or in Gothic.

The process assumed above may be illustrated from the following example, a change in which both stages are historically attested, and one is not reconstructed. In Early New High German the sound sequence /tš/, up to that time foreign to German, suddenly appears. It is usually assumed that it represents a phonetic development from the sequence -kz- or -kez-, though it may be from another dialect (Upper German) or even from another language.[25] At any rate, it came to be used for the sequence -kz- and -kez-, a sequence which occurred for the most part in intensive verbs and iterative verbs formed with the Germanic suffix *-atja-, OHG -a(z)z-, -e(z)z-, -i(z)z-, mostly occurring in verbs indicating movement, noise, strong feeling.[26] At any rate, sometime after its introduction, it became a productive phonesthemic sequence in the sense of 'rapid movement, intermittent movement', cf. the forms: wutschen 'to

avoid with a rapid movement' (to wischen 'whisk, move rapidly' or to weichen 'to avoid'), rutschen 'to slip, skid' (to rücken 'to move'), lutschen 'to suck one's thumb', 'to make noises while eating' (an intensive to lecken 'to lick' or to lüstern 'to desire' ?), pitschen 'to hiss like a drop of water on a hot stove' (to pischen 'to hiss'), watscheln 'to stagger, waddle' (to wackeln 'to wiggle' or wanken 'stagger, totter'), etc. It is now one of the most often used phonesthemic devices of Modern German. To attempt to derive all cases or even the majority of cases of -/tš/- phonetically would be folly. The reader can doubtless supply numerous examples of like formation from his own experience.

Geminates in Old Norse

There remains now the problem of so-called 'expressive' geminates in Old Norse. It is often assumed that the geminates pp, tt, kk; bb, dd, gg of Old Norse are derived from Proto-Germanic geminates, either from n-assimilation or from expressive gemination in Proto-Germanic.[27] They are said to occur especially in intensive verbs, pet-names, diminutives, and pejoratives.[28] It has been demonstrated above that n-assimilation did not occur in Proto-Germanic. The problem to be dealt with now is the explanation of the expressive geminates in Old Norse.

1. Intensive verbs in Old Norse. It has been held that the verbs with geminated voiceless stops in Old Norse (primarily West Norse) are intensives formed because voiceless geminates have a feeling of energy about them, are suited for the expression of energetic activities.[29] The problem is to explain this phenomenon, which will be accepted here for the sake of argument. It is a well known fact that in West Norse nasal + voiceless stop yielded geminate voiceless stop (mp, nt, nk > pp, tt, kk). It is also true that most of the verbs which had nasals + voiceless stops also had an 'energetic' meaning, cf. the following: søkkua 'to sink', støkkua 'to spring', hrøkkua 'to fall back, recoil' (OSwed. rynkia), detta 'to drop, fall' (OSwed. dynter 'a blow'), kløkkua 'to sob' (Mod. Danish klynke), Mod. Icel. skuetta 'to bespatter' (Gk. spendein 'to pour a libation' ?), Mod. Norw. sletta (OSwed. slinta) 'to slip, slide', OIcel. spretta 'to spring' (MHG sprinzen), skreppa 'to slip' (MLG schrimpen),

þekkia 'to espy, perceive', hlakka 'to cry out, scream' (Lat. clango ?), keppa 'to contend, strive hard' (to kempa 'champion', loan from East Norse ?), kreppa 'to squeeze, press hard' (Mod. Engl. cramp), stappa 'to stamp', etc. Indeed, of the verbs cited by Noreen (Aisl. Gr.[4], pp. 99, 192 ff.), all but two drekka 'to drink', þakka 'to thank') have an 'energetic' meaning. The energetic meaning of the voiceless geminates is reinforced also by the imperative of verbs in which the nasal has been retained before voiced consonants, but lost in the imperative, where the consonant was devoiced, cf. bitt 'bind' (to binda), sprikk 'spring' (to springa), gakk 'go' (to ganga), etc. It is interesting to note in this connection that the imperative is occasionally found with a geminate in verbs which do not have a nasal, cf. blótt 'sacrifice' (to blóta), grátt 'cry' (to gráta) (cf. Gothic blotan and gretan). It is not necessary to think of a nasal phonestheme of the type found in Modern German (cf. runschen 'to roar loudly' (of the wind), to rauschen 'to rustle'; pantschen 'to make a big splash', to patschen 'to go splat', etc.) in Early Norse to account for this phonesthemic use of the long consonants in West Norse,[30] it is merely necessary to point out that most of the verbs with geminates from nasal + voiceless stop have an energetic meaning, and that the expressive function may have spread from them. There is, of course, the possibility that Proto-Germanic may have employed a nasal as a phonestheme, since most of the Modern Germanic languages use nasals in this function.[31] It should also be pointed out that the number of examples of alleged 'energetic' gemination is quite small, and that several of those cited by Wissmann are usually considered as loans from Low German.

The voiced geminates are said to be used in Old Norse and in the modern Scandinavian languages to form pet-names, diminutives and pejoratives, and this process has been assumed for Proto-Germanic, especially since West Germanic also has short names with gemination.[32] Thus, we find, in Modern Swedish, such forms as: babbe 'child, little boy, brat', babbe 'short, fat person', dobbe 'bolt, small tree-trunk', klabbe 'log, tree-trunk, stump, short, fat boy', knabbe 'stocky, strong fellow', knubb 'a short, knotty stick', kubb 'short, chopped-off pieces of a stick', kvabb 'a short, fat fellow', etc. used as diminutives and as pejoratives. It has been pointed out that these diminutives and

pejoratives must be derived from hypochoristic names in earlier Norse.[33] It is especially interesting to note how many of them may be used for 'tree-trunk, stump, fatso'. The custom of giving names to difficult stumps is attested in earlier times, cf. storro 'old stiff-neck' (to starr 'stiff, hard, fast'), stabbi 'Steve' (to Stephan), Mod. Norw. kabbe 'tree-trunk' (to kafl 'stave, splinter, piece of wood'), etc. The meaning of 'short, fat person' may well have developed from this usage.[34]

It has been shown above that the gemination in pet-names in West Germanic is due to West Germanic n-assimilation. Since it has been stated above that n-assimilation did not take place in Norse, this explanation cannot be used here, but we must must nevertheless explain the fact that West and North Germanic show a parallel development. First, it should be noted that this parallel development is only an illusion. The short-names of Norse differ in several respects from those of West Germanic; first, they are not all n-stems, but the majority of them are also inflected strong or may be inflected strong;[34] second, they are not formed, as in West Germanic in general, on the base of the first stem of the two-stem name alone, but on the base of the first stem+ the first consonant of the second component. This is shown clearly by the following forms: Ambi (to Arnbjorn), Smjorki (to Smjorkari), Tomi (to Þor-mundr), Torfi (to Þor-viðr), Tosti (to Þor-steinn), Valki (to Val-garðr).[36] It is lack of cognizance of this rule which has led von Friesen and Hellqvist to propose hypochoristic gemination in Norse. By far the overwhelming majority of geminates found in short-names in Old Norse are the result of regular phonetic development, cf. the following: Sibbi (to Sigbjorn, gb > bb), Gubbi (to Guðbrandr or Guðbjorn, ðb > bb), Gudda (to Guðriðr), Viddi (to Viðrir 'weather-god, Thor'), lodda 'woman' (poetic) (to lūðra 'to crawl, cling', ðr > dd; cf. sam-mæddr 'from the same mother', to mæðri, koddi 'bag', to Modern Icel. koðri 'testicles'), etc.[37] The lack of this change in the two-stem names is to be explained by the intervention of juncture between the parts or by the existence of the simplex beside the compound. It is obvious what has happened; since so many of the short-names contained geminates which had arisen by regular phonetic change, the geminates acquired the function of forming short names. If we use the explanation of expressive gemination, then we are left

with the problem of the explanation of the cases in which gemination did not take place.

Expressive Gemination

The above deliberations have been primarily concerned with a plausible explanation of the geminate stops of the older Germanic languages, and with the demonstration that geminate stops did not exist in Proto-Germanic. Several times the question of expressive gemination has come up, but nothing has been said to disprove the theory of expressive gemination, though I have several times pointed out its lack of applicability to the problems dealt with. It is the purpose of this section to present the case against this theory.

Since expressive gemination is adduced only to account for intensives and hypochoristics, numerous geminates are left unexplained by this theory. How does one explain the common gemination of n-stems in OE and OHG by means of this theory, since OHG rocko, OS roggo, OE rogge 'rye', OHG stecko 'staff', OE ebba 'ebb-tide', for example, cannot be explained as hypochoristics? Another demonstration of the invalidity of the assumption of expressive gemination is seen in the numerous forms where the stem-final is not geminated, but replaced by another geminate (for example the often cited zücken (= *tugg-) and züpfen (= *tupp-)). Further, no plausible explanation has been given for the lack of geminates after a long syllable, other than by later reduction of original geminates, whereas n-assimilation naturally took place only after a short syllable, since sequences of the type *āCnV were rare in Germanic, by virtue of the restriction imposed by Sievers' Law in IE.

Besides these objections to the theory of expressive gemination, which are of a more practical nature, and which are restricted to the case of Germanic, it seems to me that there is another objection of a graver nature, a general methodological one. The assumption of a spontaneous creation of expressive sound sequences (Martinet adds the restriction that the sequence must exist already in the language) entails the assumption of spontaneous sound change, and would mean the relinquishment of the hard-won advances of historical linguistics since the mid-

dle of the last century. The regularity of sound change, without reference to psychological processes, is a theory proven countless times in practical operations; to relinquish it would mean giving up IE linguistics as we now know it, for, if sound change is not regular, the charts of sound correspondences, cognate relationships, etc. are mere fiction. We ought not to be willing to relinquish this hard-won position without investigating thoroughly the possibilities of explanation for expressive sound sequences.

Expressive sound sequences are probably present in all languages; nevertheless, they differ for each language. For example, in a recent article devoted to words for light in OHG, Miss I. M. Reps has pointed out the fact that the sequences gl- and bl- are very common in words for light phenomena, as also in Modern English. She explains this situation as follows (I translate):

> If thus b- and g- succeed in the sound-formation of the sense-perception in question, the b- in the sudden bursting open of the closed lips, the g- in its tongue-position, which at the same time conforms and resists, then the following l- imparts the experience of light, flowing and streaming out.[38]

A simple experiment will show that this sound-symbolization, if it indeed occurs, is not universal. One can repeat all the English words with gl- which indicate light phenomena to a Frenchman who knows no English or little English, and he does not perceive that they are words for light. The same is true of the American who hears for the first time the Lithuanian words brėkšti 'to dawn', brókšti 'to get dark', blýkšti 'to pale', etc., all of which contain the phonestheme ks̆, having to do with phenomena of light.[39] The same may be said of the following statements by Martinet (I translate):

The words pack and bag (OIcel. pakki and baggi) are quasi-synonyms in English, but the first can be used for a package of small dimensions (a pack of cards) and is often in competition with the diminutive packet; to bag on the contrary there is attached an idea of weight; bag often indicates something which hangs or drags, pants which are too long or too big, the udder of a cow or a goat.

It would not be difficult to find in English and in other lang-

uages a number of analogous examples demonstrating that the stops which the phoneticians call voiced lend themselves perfectly to the expression of dull noises, heavy objects which can produce these sounds, in falling for example, of everything which is heavy, obtuse, slow, moist, limp and dull, while the voiceless stops are wont to express the opposite notions of lightness, acuity, of vivacity and dryness.[40]

Exactly the opposite would be shown by Russian, I think, for numerous roots of that language have voiced stops with energetic meanings, cf. the root b,i 'to beat, spank' in razb, ivat, 'to break, smash (windows, glass, etc.)', bud in bud, it, 'to wake, awaken' (the root means 'awake, vigil, watch, brave, sound' according to Patrick), b,eg 'run, flight' in b, egat, 'to run', br,ed in br,et 'raving, frenzy', bur 'storm' in bura, vag in otvaga 'daring, audacity', etc. Or, using the example of bag being used to indicate udder, one might also cite English teat and pap, with the same meaning, but with voiceless stops.

If it is true that expressive sound sequences are arbitrary for each language, then it must be true that the 'meaning' attached to them is not universal. I would suggest that the following is always true where a language has expressive sound sequences. Either by regular phonetic development or by borrowing, certain sound sequences or certain sounds have arisen in the language. By accident, as it were, these sequences have come to occur to a great extent in words which share some vague semantic relationship, so that they may be abstracted from the rest of the word and be used in new formations with that vague meaning. This process has been very aptly described by M. Bloomfield: "Every word, in so far as it is semantically expressive, may establish, by haphazard favoritism, a union between its meaning and any of its sounds, and send forth this sound (or sounds) upon predatory expeditions into domains where the sound is at first a stranger and a parasite."[41] This process has been illustrated above by the case of the -/tš/- phonestheme in NHG.

The discussion of phonesthemic sequences does not belong to the historical phonology of the language, no more than do such processes as analogy and contamination, except to explain

why the usual sound-change did not take place in such and such a case. The use of and the arising of phonesthemes in a language present merely special cases of the processes of analogy and contamination, long used to explain 'exceptions' to sound-laws.

Conclusions

The assumption of the existence of long stops in Proto-Germanic rests on insufficient evidence, and seems to be contradicted by the Gothic evidence. The assumption of n-assimilation in Norse also contradicts the known evidence. Therefore, long stops and n-assimilation did not occur in Proto-Germanic. The West Germanic evidence cited to support the assumption of long stops in Proto-Germanic lends itself easily to another explanation. The assumption of expressive gemination in the Germanic languages, arising from baby talk or from lower strata of the population was shown to be unnecessary, since a historical explanation for expressive gemination, derived from regular sound change, can be given.

On the methodological side, it is obvious that the choice of which sounds shall be expressive is arbitrary for each language. Expressive sound sequences are not created ex nihilo but arise by accident, in that a number of words sharing the same vague general meaning have a sound sequence in common. Once a phonestheme has thus been created, it is free to be extended by the well-known processes of analogy and contamination, to words where it is historically not justified. The phonestheme is just as important to historical and comparative longuistics as are analogy and contamination; it is highly probable that the attempt to set up phonesthemes for older stages of languages or even reconstructed languages will lead to a better understanding of these languages and to the sound-laws connecting them. A methodology of treatment has yet to be worked out.

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1. E. Prokosch, A Comparative Germanic Grammar, Philadelphia, 1939, § 30; H. Hirt, Handbuch des Urgermanischen, Vol. I, Heidelberg, 1931, § 60; F. Kluge, Vorgeschichte der

altgermanischen Dialekte, 2nd ed., Strassburg, 1897, p. 383; W. Streitberg, Urgermanische Grammatik, Heidelberg, 1896, 138 ff.; F. Dieter, Laut- und Formenlehre der altgermanischen Dialekte, Leipzig, 1900, p. 184.

2. Cf. the authorities cited in footnote 1 and H. Osthoff, PBB 8 (1882) 297 ff.; F. Kluge, PBB 9 (1884) 157 ff.; F. Kauffmann, PBB 12 (1887) 504 ff. For a discussion of the history of the problem, see W. Streitberg, V. Michels, M. H. Jellinek, Geschichte der indogermanischen Sprachwissenschaft, 2nd part, Vol. 2, "Germanisch I", pp. 329-335; A. Martinet, La gémination consonantique d'origine expressive dans les langues germaniques, Paris, 1937, pp. 85 ff.

3. It is often assumed that the gemination was "expressive" and that n-assimilation did not take place at all, cf. R. Trautmann, Germanische Lautgesetze, Königsberg (Diss.), 1906, 63ff.; W. Wissmann, Nomina Postverbalia (=Ergänzungshefte zur Zeitschrift für vergleichende Sprachforschung XI, 1932) 160 ff.; Martinet, op. cit.; see also the authorities cited in Martinet, p. 93 ff. and in Streitberg-Michels-Jellinek. A. Noreen, Abriss der urgermanischen Lautlehre, Halle, 1894, p. 115 thought the geminates to be perhaps inherited from geminates which arose in IE by n-assimilation, cf. also F. A. Wood, Post-consonantal w in the IE Languages, Language Monographs 3, Philadelphia, 1926, p. 114, who calls this change "a Prim. Germ. or pre-Germ. (italics mine) process." W. Wissmann, ZfdA 76 (1939) 3 thought some geminates were inherited from IE "expressive gemination,"cf. also O. v. Friesen, Om de germanska mediageminatorna, Upsala Universitets Årsskrift, 1897, pp. 14 ff. L. Bloomfield, "Einiges vom germanischen Wortschatz," Sievers Festschrift, Halle, 1925, p. 93 felt that a phonetic process which had not yet been discovered might have brought about long stops in Germanic (cf. also Neckel, AfdA 35 (1912) 83). J. Kuryłowicz, "Problems of Germanic Quantity and Metre," Bulletin of the Polish Linguistic Society 10 (1950) 31-40, speaks of a "morphological gemination" and denies any phonetic change.

4. Taken from Prokosch, p. 70, Hirt I, p. 92 f.; Bloomfield, p. 92 f.

5. Cited by Bloomfield, p. 92. He evidently considers OIcel. t, as opposed to d in the etyma in the other Germanic languages (OFris. bodem, OS OHG bodan), to be proof of an earlier *tt,

later simplified.

6. It was Kauffmann, op. cit., p. 508 f., who first brought West Germanic lengthening before -n to the attention of the scholarly public (it had already been mentioned by R. Kögel, Über das Keronische Glossar, Halle, 1879, p. 78, among others). Almost all the handbooks accept this change, cf. Hirt I, 98 ff.; Prokosch, p. 89; Streitberg, p. 150; W. Braune & W. Mitzka, Althochdeutsche Grammatik, 8th ed., Tübingen, 1953, p. 94.
7. W. G. Moulton, "The Stops and Spirants of Early Germanic," Language 30 (1954) p. 3 and footnote 6.
8. This was first suggested by von Friesen (Mediageminatorna, p. 9 -I translate): "The geminate voiced stops (media) appear namely, in by far the preponderate number of cases, in words which belong to the sphere of the lower or every-day language, for which reason it is quite natural that cases are lacking in the Gothic literature which has come down to us." R. Loewe, "Gotische Namen in hagiographischen Texten," PBB 47 (1922/23) 413, 433, believes that Latin and Greek authors offer us evidence of lengthening in pet-names in Gothic (Cf. Abippas, Goddas, Sunnia, etc.), but that the paucity of evidence is due to the fact that most of the chronicles report only the names of kings, bishops, etc.; Cf. also W. Schulze, Berliner Sitzungsberichte (1908) p. 616, who cites also occasional spellings in our Gothic MSS; Martinet, p. 63 ff.
9. Martinet, p. 64.
10. Compounds with prepositions as first components evidently had some kind of juncture after the preposition, cf. inkilbo 'pregnant, inkunja 'compatriot', with nk instead of gk (=dental nasal + k instead of velar nasal + k).
11. Martinet, p. 64: "Toutefois il n'est pas indifférent de constater que c'est précisément un mot atta du langage enfantin qui est le premier mot attesté en germanique avec une occlusive géminée expressive." Wissmann, ZfdA 76 (1939) 3.
12. W. Braune, PBB 9, 546, footnote 3, believed that the dd in ddj and the gg in ggw might be merely graphic representations for stops, since d and g are usually considered to have been spirants medially between vowels. It is generally held (since W. Scherer, Zeitschrift für die österreichischen Gymnasien 19 (1868) 855) that the graphic sequence ggw indicated both /ngw/ and /ggw/. Since Wulfila had a means ready at hand to indicate such a phonemic difference if it occurred (he

could have used ngw for /ngw/ and ggw for /ggw/), it seems rather daring to assume a phonemic difference, cf. my remarks on this subject in the article "Über gotisch ai au," to appear soon in PBB. In addition, the change of geminate to nasal plus consonant is so widespread that no one can object to the assumption of such a change (cf. E. Schwyzer, KZ 61 (1934) 230 ff., 245 ff.). Therefore ggw probably signaled merely /ngw/ in Gothic. Comparative evidence can only be accorded more weight than internal evidence if discarding the comparative evidence entails the assumption of a sound-change which is unlikely to have taken place (cf. GL 1 (1955) 85).

13. Streitberg, Michels, Jellinek, p. 332; cf. Wissmann, Nomina Postverbalia, p. 160, Martinet, p. 96.
14. Martinet, p. 99, Kuryłowicz, p. 31.
15. Martinet, pp. 102 ff.
16. Trautmann, op. cit., 63 ff.; Streitberg-Michels-Jellinek, p. 332; Wissmann, Nomina Postverbalia, p. 160 ff.; Martinet, p. 96 f.
17. Cf. Streitberg-Michels-Jellinek, p. 332. It should perhaps be noted that the tt of OFris. hwitt is derived by F. Holthausen from the comparative and superlative forms (KZ 72 (1955) 201 f.).
18. Bloomfield, "Wortschatz," p. 93.
19. This is the answer usually given to those who consider these geminates to be expressive in origin, see especially Bloomfield, "Wortschatz," and JEGP 11, 270; J. Janko, IF 19 (1906) 46; Wilmanns, Deutsche Grammatik, 2nd ed., vol. II, Strassburg, 1899, § 66; Hellqvist, cited by Martinet, p. 93; Streitberg in Streitberg-Michels-Jellinek, p. 335.
20. Taken from Hirt, p. 92 f. and Paul, PBB 7 (1880) 133, footnote 2.
21. Cf. Martinet, p. 32.
22. For a discussion of the morphological problems presented by such sequences, see Harris, Methods in Structural Linguistics, Chicago, 1951, p. 177 f.; Bloomfield, Language, p. 244 ff.; D. L. Bolinger, "Rime, Assonance and Morpheme Analysis," Word 6 (1950) 117-136. It is obvious, for example, that we cannot set up a Proto-Germanic stem *tu-, with the morphemes *-g, *kk, *pp added, to account for Modern German Zug, zücken, zupfen, since the elements *g, *kk, *pp would

would not combine regularly with other morphemes, and especially since *tu- would combine only with *g, *kk, and *pp, i.e. the stem-final sequence *pp, for example, would not occur with a set of initial sequences which share a feature of combinability, to use Harris' criterion.

23. The term phonestheme is of recent vintage, evidently having been coined by Householder from an older term 'phonaesthetic', suggested by Firth (cf. Bolinger, Word 6 (1950) 130). It is useful to have a term to distinguish expressive sequences (i.e. indicative of abstract states of mind, not actions or objects) from onomatopoetic formations, etc. The literature on the problem of the phonestheme is extensive, though little has been written on its application to historical problems. See especially J. R. Firth, "The Use and Distribution of Certain English Sounds," ES (1935) 8-18; "Modes of Meaning," Essays and Studies (1951) 118-149.
24. Braune-Mitzka, p. 96.
25. R. Thurneysen, cited by H. Paul, Deutsche Grammatik, Vol. I, Halle, 1916, § 23, Anm. 2.
26. Paul, ibid., § 23; J. Winteler, Über die Verbindung der Ableitungssilbe got. -atj-, ahd. -azz- mit guttural ausgehenden Stämmen resp. Wurzeln, PBB 14 (1889) 455-472; Wissmann, ZfdA 76 (1939) 8; W. Henzen, Deutsche Wortbildung, Halle, 1947, 230 f.
27. See especially von Friesen, Mediageminatorna, A. Noreen, Altislandische Grammatik, 4th ed., Halle, 1923, § 318.
28. W. Krause, Abriss der altwestnordischen Grammatik, Halle, 1948, § 77; E. Hellqvist, Några anmärkningar om de nordiska verben med media-geminata, Göteborgs högskolas årsskrift 14 (1908), p. 6 ff.; Martinet, 108 ff.; Wissmann, Nomina Postverbalia, p. 163 ff.
29. Wissmann, p. 172 f.; Martinet, 115 ff.
30. Wissmann, ZfdA 76 (1939) 8, connected this use of the nasal with the Old Icelandic nasal before p, t, k, which is usually considered as evidence of borrowing from East Norse.
31. Wilmanns has pointed out (Deutsche Grammatik, II, § 69 Anm. 2) that many of the intensives in OHG pf, ck, tz (= reflexes of geminates) have cognate forms with nasals, cf. MHG glitzen 'to shine' : MHG, OHG glanz 'shine, splendor', MHG glenzen 'to shine'; OHG stapfon 'to step' : stampfon 'to stamp'; OHG

tupfen 'to wash' : tumfilo 'whirlpool, eddy'; MHG wacken 'to waver, stagger' : wanken 'to waver, stagger', etc. etc.

32. Von Friesen, Mediageminatorna, Hellqvist, op. cit., p. 6; Wissmann, p. 164.
33. Cf. Fr. Kauffmann, ZfdPh 32, 255 f.
34. This connection was pointed out by G. T. Flom, JEGP 19 (1920) 361.
35. Hans Naumann, Altnordische Namenstudien, Acta Germanica, Neue Reihe, Heft 1, Berlin, 1912, 150 f.
36. Ibid., p. 151 f. Naumann seems not to have realized how widespread this practice actually was.
37. It is also quite likely that Tobba (to þorbjǫrg), Tobbi (to þorbjǫrn), Todda (to þórdís), etc. represent regular phonetic development.
38. I. M. Reps, "Zu den altdeutschen Lichtbezeichnungen," PBB 72 (1950) 243.
39. Cf. A. Leskien, "Schallnachahmungen und Schallverba im Litauischen," IF 13 (1902/3) 170.
40. Martinet, p. 118 f.
41. M. Bloomfield, "On Assimilation and Adaptation in Congeneric Classes of Words," AJPh 16 (1895) 409.